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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,303	11/07/2001	Philipp Harald Nagel	6474	4511

7590 07/21/2006

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EXAMINER

TRAN, DALENA

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/037,303		NAGEL, PHILIPP HARALD	
	<b>Examiner</b>		<b>Art Unit</b>	
	Dalena Tran		3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-8 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-8 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/31/06</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

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## **DETAILED ACTION**

### **Notice to Applicant(s)**

1. This office action is responsive to the amendment filed on 7/10/06. As per request, claims 6-8, and 14-16 have been amend. Claims 1-5, 9-13, and 17 have been cancelled. Thus, claims 6-8, and 14-16 are pending.

The prior art submitted on 3/31/06 has been considered.

The allowance of claims 6-8, and 14-16 in the last office action is withdrawn.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6-8, and 14-16, are rejected under 35 U.S.C.103(a) as being unpatentable over Meek et al. (6,366,927) in view of Chojnacki et al. (6,366,851), Gudat et al. (5,610,815), and Yamamoto et al. (6,438,494).

As per claims 6 and 14, Meek et al. disclose a vehicle navigation system that receives sensor data from a plurality of sensors, and provides a map image that is presented on a display, system comprising: a navigation map data memory that includes map data indicative of roadways stored geographic features that are other than straight form (see at least the abstract; columns 3-4, lines 20-57; columns 7-8, lines 21-58; figure 10; and column 9, lines 20-64), and a navigation processing unit that receives the sensor data, and requests map data from navigation map data memory associated with the sensor data, and computes the map image from map data

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(see columns 1-3, lines 13-4; and columns 3-4, lines 21-17). Meek et al. disclose roadways stored geographic features that are other-than-straight form, for example, Bezier curve. Bezier curve is a curve generated by a computable function, represented by polynomial equations. Meek et al. do not explicitly disclose a cornu spiral (clothoid) curve. However, cornu spiral is a curve also generated by a computable function, represented by polynomial equations, and there are other ways to represent other-than-straight road segments; some of these other ways to represent other-than-straight road include clothoid curve. To modify for the teach of Meek et al., Chojnacki et al. disclose other ways to represent other-than-straight road include clothoid curve (see columns 27-28, lines 44-23). Both Meek et al., and Chojnacki et al. disclose the advantage for storing roadway data to represent other-than-straight road segments is to increase the level of accuracy of the geographic database (see Meek et al., column 6, lines 20-30; and Chojnacki et al., column 27, lines 36-43).

Meek et al., and Chojnacki et al. do not disclose Cornu spiral polynomial coefficients. However, Gudat et al. disclose navigation processing unit computes map image using Cornu spiral polynomial coefficients stored in navigation map data memory, and terms of polynomials of the unit Cornu spiral are stored in navigation map data memory and map image is computed using terms of polynomials of the unit Cornu spiral (see at least columns 10-11, lines 40-18; columns 31-32, lines 49-49; and columns 35-37, lines 54-21).

Gudat et al. do not explicitly disclose Taylor series. However, it is well known in the art as disclose in Yamamoto et al. ('494) that the polynomials of the unit Cornu spiral are associated with Taylor series expression (see '494, columns 2-3, lines 62-67).

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Meek et al., and Chojnacki et al. do not disclose the cornu spiral is of the form  $l = Ka^2$ .

However, Chojnacki et al. disclose clothoid curve (columns 27-28, lines 44-23). Also, it would have been well known in the art, as disclose in Yamamoto et al. ('494), that a clothoid curve (Cornu spiral) is a curve whose curvature is directly proportional to its arc length (see '494, at least column 1, lines 22-23). Also, as current invention, applicant disclose in specification page 4, line 20, parameter value "a = 1". Therefore, form:  $l = Ka^2$ , if (a = 1), then  $l = K$ , therefore, curvature is directly proportional to its arc length. This is well known in the art as just discussed above in Yamamoto et al. (at least column 1, lines 22-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teach of Meek et al. by combining geographic features that are other-than-straight form to include a cornu spiral form, for accurately store a different shapes curvature transition curves represent rivers or curve roads of geographic features, in order to provide a high level of accuracy in the geographic database; also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Meek et al. by combining computes map image using Cornu spiral polynomial coefficients stored in navigation map data memory, and terms of polynomials of the unit Cornu spiral are stored in navigation map data memory and map image is computed using terms of polynomials of the unit Cornu spiral associated with Taylor series for accurately determine a Cornu spiral form of roadways and provide an accurate map image; and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Meek et al. by combining arc length and curvature form of the cornu spiral to generate curvature transition curves of the roads using the clothoid (cornu spiral) curve.

As per claims 7-8 and 15-16, Meek et al. disclose a vehicle navigation system that receives sensor data from a plurality of sensors, and provides a map image that is presented on a display, system comprising: a navigation map data memory that includes map data indicative of roadways stored geographic features that are other than straight form (see at least the abstract; columns 3-4, lines 20-57; columns 7-8, lines 21-58; figure 10; and column 9, lines 20-64), and a navigation processing unit that receives the sensor data, and requests map data from navigation map data memory associated with the sensor data, and computes the map image from map data (see columns 1-3, lines 13-4; and columns 3-4, lines 21-17). Meek et al. disclose roadways stored geographic features that are other-than-straight form, for example, Bezier curve. Bezier curve is a curve generated by a computable function, represented by polynomial equations. Meek et al. do not explicitly disclose a cornu spiral (clothoid) curve. However, cornu spiral is a curve also generated by a computable function, represented by polynomial equations, and there are other ways to represent other-than-straight road segments; some of these other ways to represent other-than-straight road include clothoid curve. To modify for the teach of Meek et al., Chojnacki et al. disclose other ways to represent other-than-straight road include clothoid curve (see columns 27-28, lines 44-23). Both Meek et al., and Chojnacki et al. disclose the advantage for storing roadway data to represent other-than-straight road segments is to increase the level of accuracy of the geographic database (see Meek et al., column 6, lines 20-30; and Chojnacki et al., column 27, lines 36-43).

Meek et al., and Chojnacki et al. do not disclose Cornu spiral polynomial coefficients. However, Gudat et al. disclose navigation processing unit computes map image using Cornu spiral polynomial coefficients stored in navigation map data memory, and terms of polynomials of the

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unit Cornu spiral are stored in navigation map data memory and map image is computed using terms of polynomials of the unit Cornu spiral (see at least columns 10-11, lines 40-18; columns 31-32, lines 49-49; and columns 35-37, lines 54-21), and the navigation map data memory includes coordinates of the unit Cornu spiral stored in a table, from which the Cornu spirals of the navigation map are derived for roads, railroad lines, rivers, lakes, and similar cartographic parameters defined as Cornu spirals (see columns 36-37, lines 10-21).

Gudat et al. do not explicitly disclose Taylor series. However, it is well known in the art as disclose in Yamamoto et al. ('494) that the polynomials of the unit Cornu spiral are associated with Taylor series expression (see '494, columns 2-3, lines 62-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teach of Meek et al. by combining geographic features that are other-than-straight form to include a cornu spiral form, for accurately store a different shapes curvature transition curves represent rivers or curve roads of geographic features, in order to provide a high level of accuracy in the geographic database; also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Meek et al. by combining computes map image using Cornu spiral polynomial coefficients stored in navigation map data memory, and terms of polynomials of the unit Cornu spiral are stored in navigation map data memory and map image is computed using terms of polynomials of the unit Cornu spiral associated with Taylor series for accurately determine a Cornu spiral form of roadways and provide an accurate map image.

**Remarks**

4. Applicant's amendment filed on 7/10/06 has been fully considered. Upon updated search, and reviewing all the references cited, Yamamoto et al. reference is still considering the relevant art, therefore, the updated ground of rejection has been set forth as above.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalena Tran whose telephone number is 571-272-6968. The examiner can normally be reached on M-F 6:30 AM-4:00 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patent Examiner  
Dalena Tran



July 18, 2006